

AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-2 (Canceled)

3. (Previously Presented) The apparatus of Claim 36, wherein an upstream feeder is flowingly connected to cause and to control input feed of the mixable materials.

Claims 4-20 (Canceled)

21. (Withdrawn) In a method of mixing plastic or plastifiable materials in an extruder comprising a rotatable extruder screw having a mixing section comprising a plurality of inlet and outlet channels for said materials, the steps which comprise:

- (a) drawing said materials into an inlet channel,
- (b) cross-axially pumping said material from said inlet channel to at least one subsequent said inlet channel, and
- (c) cross-axially pumping said material.

22. (Withdrawn) The method of Claim 21, comprising the further step of cross-axially pumping said material into an outlet channel.

23. (Withdrawn) The method of Claim 21 comprising the further step of controlling upstream feed of input of said material to said extruder.

24. (Withdrawn) The method of Claim 23, wherein said input is fed through a screw channel, and wherein said step of controlling comprises constraining the feed rate of said screw channel.

25. (Withdrawn) The method of Claim 21 comprising the further step of controlling the rate of material output from said outlet channel.

26. (Withdrawn) The method of Claim 23, wherein an output flight is connected to a channel of extruder, and wherein said step of controlling comprises limiting the rate of rotation of said output flight.

27. (Withdrawn) The method of Claim 21, comprising the step of starve feeding said extruder.

28. (Withdrawn) The method of Claim 21 comprising the step of applying resistance to output material flow to force said plastic material into said outlet channel.

29. (Withdrawn) The method of Claim 21 comprising the step of introducing said plastifiable material separately into a plurality of separate inlet channels.

30. (Withdrawn) The method of Claim 21 comprising the step of concurrently feeding said plastifiable material into a multiplicity of individual channels.

31. (Withdrawn) The method of Claim 21 including the further step of connecting a plurality of said channels together for concurrent flow of said material therein.

32. (Withdrawn) The method of Claim 21 comprising the step of removing said mixed material concurrently through a plurality of multiple outlet flights.

33. (Withdrawn) The method of Claim 21 comprising the further step of maintaining said plastifiable material in a melted state within said mixing section.

Claims 34-35 (Canceled)

36. (Previously Presented) An extruder mixer for plastified flowable material comprising:

an elongated rotatable screw having an elongational mixing zone adapted to mix material flowing therethrough, the mixing zone having:

a substantially axially disposed inlet channel in fluid communication with a substantially axially disposed outlet channel;

both the inlet channel and the outlet channel being bounded on one side by a substantially axially disposed blocking wall which substantially prevents material from flowing therewith;

a substantially axially disposed first intermediate channel disposed between the inlet and the outlet channels and in fluid communication therewith;

a substantially axially disposed first cross-axial pump disposed between the inlet channel and the first intermediate channel, the first pump drawing the material from the inlet channel into the first intermediate channel; and

a substantially axially disposed second cross-axial pump disposed between the first intermediate channel and the outlet channel, the second pump drawing the material out of the first intermediate channel into the outlet channel to deliver the plastified material out of the mixing zone.

37. (Previously Presented) The extruder mixer according to claim 36, wherein the inlet channel is open at a downstream end for allowing material to flow directly out of the inlet channel to outside of the mixing zone.

38. (Previously Presented) The extruder mixer according to claim 36, wherein the dimensions of the channels are the same.

39. (Previously Presented) The extruder mixer according to claim 36, wherein the dimensions of the channels are different from each other.

40. (Previously Presented) The extruder mixer according to claim 36, further comprising:

at least one pair of an additional substantially axially disposed intermediate channel and cross-axial pump disposed after the second pump and in fluid communication therewith, the additional pump being disposed after the additional channel and drawing material from the additional channel into the succeeding channel and pump pair.

41. (Previously Presented) The extruder mixer according to claim 36, wherein the inlet channel blocking wall and the outlet channel blocking wall are the same.

42. (Previously Presented) The extruder mixer according to claim 36, further comprising a screw channel disposed on the rotatable screw before the input channel of the mixing zone and flowingly connected to control the flow rate of the material into the mixing zone.

43. (Previously Presented) The extruder mixer according to claim 36, further comprising an output flight flowingly connected to at least one of the blocking walls.

44. (Previously Presented) The extruder mixer according to claim 36, wherein the dimensions of the cross-axial pumps are the same.

45. (Previously Presented) The extruder mixer according to claim 36, wherein the dimensions of the cross-axial pumps are different from each other.

46. (Previously Presented) The extruder mixer according to claim 36, wherein the channels are oriented substantially parallel to the longitudinal axis of the screw.

47. (Canceled)

48. (Previously Presented) The extruder mixer according to claim 36, further comprising a resistance device disposed on the screw after the mixing zone for forcing the plastic material back into said the output channel.

49. (Previously Presented) The extruder mixer according to claim 36, wherein the intermediate channel is bounded by a flight on an upstream end for preventing material from flowing directly into the intermediate channel from outside of the mixing zone.

50. (Previously Presented) The extruder mixer according to claim 36, wherein the outlet channel is bounded by a flight on an upstream end for preventing material from flowing directly into the outlet channel from outside of the mixing zone.

51. (Previously Presented) The extruder mixer according to claim 36, wherein the intermediate channel is open at an upstream end for allowing material to flow directly into the intermediate channel from outside of the mixing zone.

52. (Previously Presented) The extruder mixer according to claim 40, wherein at least one of the at least one additional channel is open at an upstream end for allowing material to flow directly into the at least one additional channel from outside of the mixing zone.

53. (Previously Presented) The extruder mixer according to claim 36, wherein the intermediate channel is open at a downstream end for allowing material to flow directly out of the intermediate channel to outside of the mixing zone.

54. (Previously Presented) The extruder mixer according to claim 40, wherein at least one of the at least one additional channel is open at a downstream end for allowing material to flow directly out of the at least one additional channel to outside of the mixing zone.